



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

26646 7590 01/06/2011

KENYON & KENYON LLP
ONE BROADWAY
NEW YORK, NY 10004

EXAMINER

MEYER, JACOB B

ART UNIT

PAPER NUMBER

3618

DATE MAILED: 01/06/2011

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/575,135

05/14/2007

Jochen Fassnacht

10191/4605

9310

TITLE OF INVENTION: METHOD FOR REGULATING THE STATE OF CHARGE OF AN ENERGY ACCUMULATOR IN A VEHICLE HAVING A HYBRID DRIVE UNIT

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	04/06/2011

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

26646 7590 01/06/2011

**KENYON & KENYON LLP
ONE BROADWAY
NEW YORK, NY 10004**

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/575,135 05/14/2007 Jochen Fassnacht 10191/4605 9310

TITLE OF INVENTION: METHOD FOR REGULATING THE STATE OF CHARGE OF AN ENERGY ACCUMULATOR IN A VEHICLE HAVING A HYBRID DRIVE UNIT

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
-------------	--------------	---------------	---------------------	----------------------	------------------	----------

nonprovisional NO \$1510 \$300 \$0 \$1810 04/06/2011

EXAMINER	ART UNIT	CLASS-SUBCLASS
----------	----------	----------------

MEYER, JACOB B 3618 180-065290

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/575,135	05/14/2007	Jochen Fassnacht	10191/4605	9310
26646	7590	01/06/2011	EXAMINER	
KENYON & KENYON LLP ONE BROADWAY NEW YORK, NY 10004			MEYER, JACOB B	
			ART UNIT	PAPER NUMBER
			3618	
DATE MAILED: 01/06/2011				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 625 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 625 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability	Application No.	Applicant(s)	
	10/575,135	FASSNACHT, JOCHEN	
	Examiner	Art Unit	
	JACOB MEYER	3618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed 12/14/2010.
2. ☒ The allowed claim(s) is/are 17,18 and 21-40.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input type="checkbox"/> Other _____. |
|--|---|

/Jeffrey J Restifo/
Primary Examiner, Art Unit 3618

Art Unit: 3618

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

The application has been amended as follows:

In the Claims:

a. In lines 5-6 of claim 40, "a likely amount of charge be received" has been deleted and replaced with --a likely amount of charge to be received--.

DETAILED ACTION

Allowable Subject Matter

2. Claims 17-18 and 21-40 are allowed.

3. The following is an examiner's statement of reasons for allowance: the prior art when taken alone or in combination does not teach or fairly suggest at this time a method for regulating a state of charge of an energy accumulator for storing electrical energy in a vehicle having a hybrid drive unit, an internal combustion engine and at least one electrical machine which can be coupled to a power train of the vehicle, comprising: regulating the state of charge of the energy accumulator as a function of a velocity of the vehicle; and lowering a setpoint value of the state of charge by a value that corresponds to a likely charge to be received by the energy accumulator during a deceleration of the vehicle from an instantaneous velocity to a standstill; wherein the value that corresponds to a likely charge to be received is obtained by accessing a predefined characteristic curve that predicts the value that corresponds to a likely

Art Unit: 3618

charge to be received as a function of velocity [claim 17]; a vehicle, comprising: a hybrid drive unit; a power train; an internal combustion engine; at least one electrical machine that can be coupled to the power train of the vehicle; an energy accumulator for storing electrical energy; and a charge controller for regulating a state of charge of the energy accumulator, wherein the charge controller: regulates the state of charge of the energy accumulator as a function of a velocity of the vehicle; and lowers a setpoint value of the state of charge by a value that corresponds to a likely charge to be received by the energy accumulator during a deceleration of the vehicle from an instantaneous velocity to a standstill; wherein the value that corresponds to a likely charge to be received is obtained by accessing a predefined characteristic curve that predicts the value that corresponds to a likely charge to be received as a function of velocity [claim 24]; or a method for regulating a state of charge of an energy accumulator for storing electrical energy in a vehicle having a hybrid drive unit, an internal combustion engine and at least one electrical machine which can be coupled to a power train of the vehicle, comprising: calculating, for various values of instantaneous velocity, a likely amount of charge be received by the energy accumulator during a deceleration of the vehicle from the instantaneous velocity to a standstill; generating a first characteristic curve in which a setpoint value of the state of charge of the energy accumulator is lowered, as a function of the instantaneous velocity, by the calculated likely amount of charge, wherein the setpoint value decreases in proportion to the square of the instantaneous velocity in a predefined velocity range between the standstill and an upper limit, and is then kept constant; generating a second characteristic curve in which the setpoint value is kept constant up to a predefined minimum velocity, then drops with a curved trajectory of increasing slope until a maximum velocity is reached, and is then kept constant;

Art Unit: 3618

providing a charge controller with access to the first and the second characteristic curves; configuring the charge controller to regulate the state of charge of the energy accumulator in accordance with the second characteristic map when the vehicle is operating from a cold start, and in accordance with the first characteristic map at all other times; and further configuring the charge controller to provide an exception to control in accordance with the first characteristic map, the exception being that the setpoint value is not lowered when energy for charging the energy accumulator is generated via energy recovery during a downhill drive, in which case the charge controller stores surplus energy in the energy accumulator independently from the velocity [claim 40]. It is noted that the prior art discloses numerous examples of battery state of charge control devices and associated methods (see references hereto attached). In particular, at least Suzuki '732, Tabata '795, and Lyons '368 disclose such state of charge control arrangements. Tabata and Lyons disclose configurations wherein the charge received by the energy accumulator is adjusted dependent on charge state and energy recovered during deceleration under regenerative braking. Suzuki discloses a configuration wherein a target state of charge is reduced during a vehicle deceleration so that the regenerative power generated can be efficiently recovered. However, the prior art does not disclose (a) lowering a setpoint value of the state of charge by a value that corresponds to a likely charge to be received by the energy accumulator during a deceleration of the vehicle from an instantaneous velocity to a standstill; wherein the value that corresponds to a likely charge to be received is obtained by accessing a predefined characteristic curve that predicts the value that corresponds to a likely charge to be received as a function of velocity or (b) calculating, for various values of instantaneous velocity, a likely amount of charge to be received by the energy accumulator during a deceleration of the

Art Unit: 3618

vehicle from the instantaneous velocity to a standstill; generating a first characteristic curve in which a setpoint value of the state of charge of the energy accumulator is lowered, as a function of the instantaneous velocity, by the calculated likely amount of charge, wherein the setpoint value decreases in proportion to the square of the instantaneous velocity in a predefined velocity range between the standstill and an upper limit, and is then kept constant; generating a second characteristic curve in which the setpoint value is kept constant up to a predefined minimum velocity, then drops with a curved trajectory of increasing slope until a maximum velocity is reached, and is then kept constant; providing a charge controller with access to the first and the second characteristic curves; configuring the charge controller to regulate the state of charge of the energy accumulator in accordance with the second characteristic map when the vehicle is operating from a cold start, and in accordance with the first characteristic map at all other times; and further configuring the charge controller to provide an exception to control in accordance with the first characteristic map, the exception being that the setpoint value is not lowered when energy for charging the energy accumulator is generated via energy recovery during a downhill drive, in which case the charge controller stores surplus energy in the energy accumulator independently from the velocity.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Art Unit: 3618

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Wakashiro, Laig-Horstebroek, Wallner, Verbrugge, Donnelly, Tabata, Nii, Taniguchi, Lyons, Chady, Drozd, and Naito disclose hybrid drive arrangements and associated state of charge configurations that may be of interest to Applicant.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JACOB MEYER whose telephone number is (571)270-3535. The examiner can normally be reached on Monday - Thursday 9am to 7pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, J. ALLEN SHRIVER can be reached on 571-272-6698. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jeffrey J Restifo/
Primary Examiner, Art Unit 3618

/J. M./
Examiner, Art Unit 3618

Application/Control Number: 10/575,135

Page 7

Art Unit: 3618